

A STUDY OF THE COMPARABLE EFFECTS OF SUCCESS AND FAILURE
IN TWO KINDS OF COMPETITION

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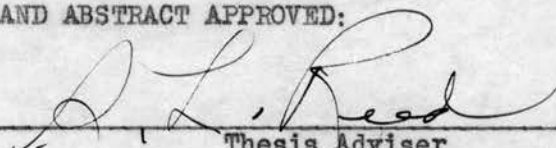
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CHAPTER I

THE PROBLEM

Introduction

Educators are interested in the various forces which determine goal setting. Most people are convinced of the importance of goals in relation to achievement. Teachers are constantly striving to stimulate students to set goals. In some instances the teacher attempts to impose goals, while in other cases the student is urged to set his own goals at reasonably high levels. The goals set by the instructor are explicit goals in the form of definite assignments and standards. Implicit goals are the inward goals that are set by the student. Some students readily accept the goals set by the instructor and successfully reach them. Other students adopt the goals but are unable to reach them because of difficulties. Some students will admit that they did not accept the imposed goals. Many students will openly state to the instructor that they intend to perform certain tasks or reach certain goals when they really do not expect to do so. That is, their true inner goals do not coincide with the goals which may be examined by others.

In almost all activity evidences of goal setting can be found. No doubt, the part played by the subject's personal characteristics is very important. Some students characteristically set high goals and others set low goals. Some students relinquish their goals only after many defeats. Another group shifts with ease according to the situation. Many people work with long-range goals in mind while others tend to have short-range goals.

The value of competition has been greatly stressed by many teachers. Some teachers feel that rivalry among students heightens their achievement. In the opinion of many teachers rivalry may be developed to a high degree, but only at the expense of cooperative effort as a group characteristic.

Competition, it is well known, may be developed in different ways. The individual may compete with his own previous accomplishments. The individual may compete with another individual. He may belong to a group and compete against another group. For example, the fourth-hour class might compete against the fifth-hour class in spelling. The individual may compete against the average of his own group or against the average of another group.

[The American system of free enterprise encourages competition. The individual who "gets ahead" usually does so by virtue of successful competition.] But Gates¹ believes that the approach to education as manifested by the whole system of grades and examinations tends to place undue emphasis on competition. Excessive competition tends to breed an indifference to the welfare of others and to enhance self-interest unduly. Stagner² believes that our whole educational system is based upon an inconsistent set of premises. We encourage individual competition and establish for all children the goal of high marks, gaining "the top of the class," bringing home a report card with all A grades, etc. Then we set a grading system in which the number of A grades is limited to a small percentage of the class. Stagner believes that few teachers are aware of the unconsciously cruel irony of this system.

¹ Arthur I. Gates and Others, Educational Psychology, p. 704.

² Ross Stagner, Psychology of Personality, p. 365.

On the other hand, freedom and cooperation are characteristics of the progressive school.³ The student assumes as much responsibility as his capacity allows. He cooperates with the group so that a common objective may be achieved. Teacher-pupil planning is an outstanding feature of many schools. Some school systems⁴ have abandoned comparative marking schemes and have substituted for them a system of objective data which gives information concerning the amount of progress the child has made from his previous status.

Statement of the Problem

The study of goal setting in level of aspiration situations is all rather recent. Consequently, much research remains to be done. No investigations have been concerned with the comparable effects of success and failure in the various types of competition used in this experiment.

This investigation is concerned with effects of success and failure in two types of competition. These two types of competition are called self competition and group competition. Self competition occurs when the student attempts to reach a higher achievement level than he did previously, using the same material. As used in this investigation, group competition occurs when the student works toward a higher level of achievement than that indicated by the average achievement of his own group.

The purpose of this investigation, therefore, is to study the effects of success and failure in two types of competition.

³ John Dewey, Experience and Education, p. 5.

⁴ Henry J. Otto, Principles of Elementary Education, p. 367.

Delimitations of the Study

The subjects were one hundred and twelve high school psychology students in Will Rogers High School of Tulsa, Oklahoma. The task was simple addition problems of four one-digit numbers. This investigation was concerned only with the typical level of aspiration situation; that is, the subject revealed his level of aspiration by setting a goal for his next trial. Goal setting and achievement were investigated as influenced by success and failure in situations in which the individual competed against his own previous record and in situations in which the individual competed against his own group's average. The details of the procedure followed will be explained in chapter three.

CHAPTER II

REVIEW OF THE RESEARCH

Introduction

The present investigation is closely related to studies concerning the motivational power of various types of competition and to studies of success and failure.

Some experiments in this area of level of aspiration have dealt with a type of group competition in which the individual worked for the achievement of the group. The results of these experiments indicated that an individual makes greater achievement when he works for his own score rather than for a group score.⁵ In the usual class situation the student is in competition with the other individuals in the class. Ordinarily no effort is made to reduce the student's individual competitive spirit. This competition is encouraged so as to motivate the student to greater effort. In some schools the students are encouraged to compete with their own previous performances. Experiments in level of aspiration do not provide adequate information for determining the effectiveness of this kind of competition.

[The student encounters various amounts of success and failure while participating in his educational experiences. A considerable number of investigations have been concerned with success and failure situations. Some of the investigations are concerned with failure and success in classroom situations, and other investigations are concerned with failure and

⁵ Herbert Sorenson, Psychology in Education, pp. 302-303.

success in performance of a simple task. The research gives no information concerning the comparable effects of success and failure in different kinds of competition.

The following review of the literature does not include references to all the experiments conducted in this area. This review has attempted to include only those which offer an important contribution.

Evolution of the Term, "Level of Aspiration"

The importance of goal setting is emphasized by a competitive culture, such as ours. The concept "level of aspiration" was first formulated by Dembo.⁶ She was making a study of anger under the guidance of Kurt Lewin at the University of Berlin, Germany. She found that when a subject was given a too difficult goal the subject would set up an intermediate goal termed the subject's "momentary level of aspiration."

In 1930 Hoppe⁷ published the first major study which was directed toward an analysis of a level of aspiration situation. Some of the subjects set the level of aspiration so high that they seldom could reach it, and others set the level so low that they could almost always reach it. It was believed that this disparity in goal setting represented differences in ambition, courage, prudence, self-confidence, etc. The experiences of success and failure in the course of an activity depended upon whether or not the subject attained the intermediate goal or momentary level of aspiration. If the subject attained the intermediate goal, he experienced the performance as a success, regardless of whether or not he

⁶ Kurt Lewin, and Others, (J. McV. Hunt - editor), Personality and the Behavior Disorders, pp. 333-378.

⁷ John W. Gardner, "The Use of the Term Level of Aspiration," Psychological Review, XLVII (January, 1940), 59-68.

had attained the goal set by the experimenter. On the other hand, if the subject failed to attain the intermediate or momentary level of aspiration, he experienced the performance as a failure. Hoppe wrote of the level of aspiration as the totality of these constantly shifting, now indefinite, now precise, expectations, goal settings or demands in connection with one's future performance. Hoppe believed that the level of aspiration had to be inferred through the use of three lines of evidence: (1) the spontaneous remarks of the subject, (2) the occurrence of success and failure experiences, and (3) the way at which the subject "goes at" the task.

Individual differences showed themselves according to the extent of the level of aspiration, according to the strength of the tendency to raise the level after success and to lower it after failure, according to the tendency to make big or little steps in one direction or the other, and according to the strength of the tendency to break off entirely after failure rather than to lower the level of aspiration gradually.

Other investigators have tended to reject Hoppe's methods of determining the level of aspiration because of the lack of precision and objectivity. Jucknat⁸ followed another procedure. In the experiment the subject revealed his level of aspiration without verbal commitments. The experimenter arranged a series of ten paper and pencil mazes in order of difficulty. The larger the maze the more difficult it was to complete successfully. The level of aspiration was revealed by the subject's choice of the maze. When other individuals become aware of the level of aspiration, social factors must be considered.

⁸ Ibid., p. 61.

As can be observed, this procedure does not satisfy the definition given by Hoppe. Hoppe was referring to the subject's true inner aims, desires, and expectations. Stating the level openly, as in Jucknat's method, causes the subject to edit his level. The definition of the level, in the Jucknat experiment, should probably be interpreted as the level of aspiration in a difficulty scale at which the subject is willing to test himself in the presence of the experimenter.

Frank⁹ believed that another definition was necessary. He defined the level of aspiration as "the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach." He believed that the relationship of the past performance to the level of aspiration depended on three factors. These factors were needs competing with each other. The first was a need to keep the level of aspiration high; the second was the need to make the level of aspiration as accurate as possible; the third was the need to avoid failure. He considered failure as any level of performance below the level of aspiration. Frank believed that the three needs formed constellations which are stable in time, and are not dependent on the performance or type of ability required. In the experimental situation Frank used three tasks which used different abilities. One task was printing for speed, another was a spacial relations test, and a third consisted of pitching rings for accuracy. He concluded that the difference between the level of aspiration and the actual level of performance is a relatively permanent characteristic of the personality regardless of the type of ability the task required.

⁹ Jerome D. Frank, "Individual Differences in Certain Aspects of the Level of Aspiration," American Journal of Psychology, XLVII (January, 1935), 119-128.

Some are of the feeling that knowledge of a previous performance should not be considered as a necessity in setting a level of aspiration. This was the belief of Chapman and Volkman,¹⁰ who had an experimental situation in which the subject stated his level of aspiration without previous experience with the task. In this situation the term level of aspiration no longer fitted the definition given by Frank. The results of the experiment showed that the level of aspiration estimated in advance of the performance is estimated neither at random nor without reference to the ability to perform the task.

Gardner¹¹ stated that the term can only refer to a quantitative indication which an individual makes concerning his future performance in an activity. He believes that the systematic evocation of these quantitative indications demands a specially designed experimental situation. This specially designed experimental situation has two important features. First, the subject must make a public indication of what he aims to achieve. The second important feature of the situation is that the subject is required to put this information concerning his aims in quantitative terms.

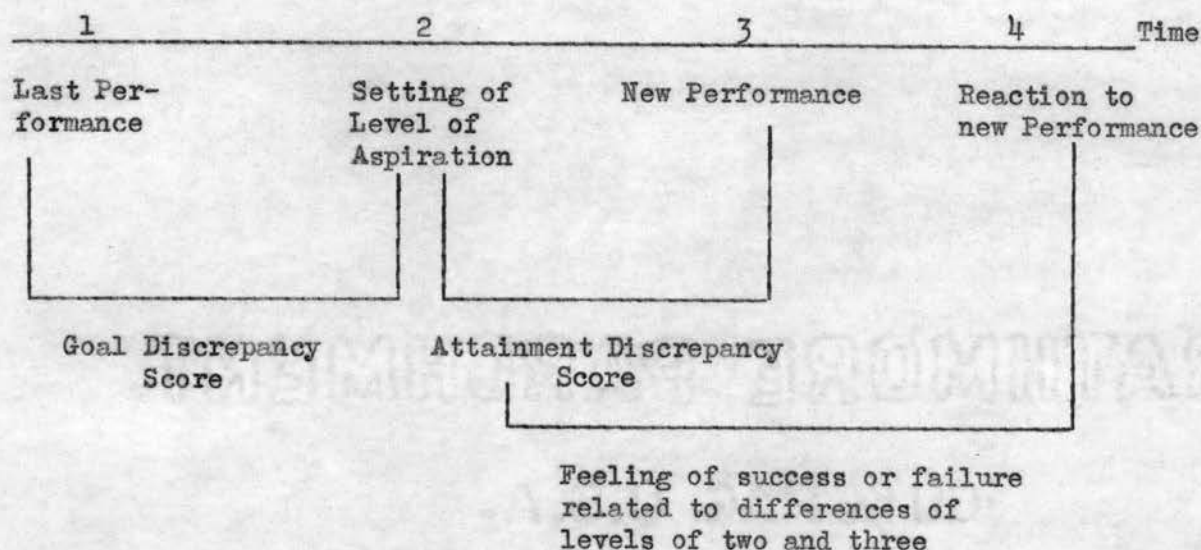
Terminology

Kurt Lewin¹² and others have helped to develop an acceptable terminology for a level of aspiration situation. A sequence of events in a typical level of aspiration situation consists of four parts.

¹⁰ D. W. Chapman and J. Volkman, "A Social Determinant of the Level of Aspiration," Journal of Abnormal and Social Psychology, XXXIV (April, 1939), 225-238.

¹¹ John W. Gardner, "The Use of the Term Level of Aspiration," Psychological Review, XLVII (January, 1940), 59-68.

¹² Lewin, and Others, op. cit., 334.



The goal discrepancy score is a number representing how far the goal has been set ahead or how far below the level of the previous performance. If the goal is larger than the previous performance, the goal discrepancy score is positive. If the goal is less than the previous performance, the goal discrepancy score is negative. The attainment discrepancy score is a term concerning the level of aspiration and the new performance. If the new performance is greater than the level of aspiration, the attainment discrepancy is positive. It is negative if the new performance is less.

Early Levels of Aspiration

Research indicates that a rudimentary level of aspiration exists in very young children. The level of aspiration is a stage at which achievement levels can be distinguished. Fales¹³ believes the rudimentary aspiration stage exists at the time when the child wants to do something by himself rather than with help. Fales' work was done with nursery children in their efforts to remove and put on their wraps. Rudimentary aspiration

¹³ Lewin, and Others, Ibid., p. 355.

was found to exist at the two-year level. This was determined by noting those pupils who refused help.

Three groups of children, about three, five and a half, and eight years of age, were used by Anderson¹⁴ to perform a ring throwing task. The developmental steps in the manner of throwing were these: placing the rings on the pegs, dropping them on, or throwing them from a distance. The re-throwing of missed rings indicated a higher developmental stage. The re-throwing of the rings after a whole series of them had been thrown indicated a higher stage of level of aspiration development than the re-throwing of a ring immediately after it was missed. The higher stage of development existed when the child regarded the series of five rings as one unit. The higher level was also indicated by the willingness to risk missing rings. The highest possible maturity score was nine. Anderson found the mean maturity scores for the groups from oldest to youngest to be 8.54, 6.34, and 2.13. The conclusion is that the maturity of the level of aspiration increases with age. The experiments showed that all of the components of the level of aspiration as found in adults can be found in eight year olds in similar situations. Anderson found that a reward reduced the maturity scores to 7.34, 5.03, and 1.03, oldest to youngest.

Generality of the Level of Aspiration

One is at once interested in how general are the conclusions drawn from the already mentioned material. The similarities of behavior in different situations must be determined. In other words, within what limits will the same factors be found under different circumstances? What is the relationship between personality factors and the obtained scores? What is

¹⁴ Lewin, and Others, loc. cit.

the nature of the variability of behavior in a definite situation?

Most of the work concerning individual differences has been done with the generality of the goal discrepancy score. Frank¹⁵ made the first specific study concerning this problem. Correlations of .57 to .75 were obtained for the discrepancy scores of two different sessions. He concluded that the level of aspiration behavior is consistent. He explained that the lower correlations for some other tasks were caused by play situations which involve less realistic tendencies.

Gould¹⁶ also drew conclusions concerning consistency. She determined the correlations for the discrepancy scores on a group of three tasks in another session. Inter-correlations varied from .04 to .44 with a median of .29. Calculation of correlations of tasks given in the same session showed a median of .46. The correlations caused Gould to believe that the subject responded more to the situation than to the task itself.

Gardner's¹⁷ work gave generality correlations similar to Frank's. He arranged the situation so that all the subjects' scores were the same. In one instance all experienced success and in another, failure. Four tasks were used. The mean correlation for the beginning level of aspiration was .37. In one part of the curve the performance was on the same level. At this part three consecutive discrepancy scores had a mean level of .37.

¹⁵ Jerome D. Frank, "Individual Differences in Certain Aspects of the Level of Aspiration," American Journal of Psychology, XLVII (January, 1935), 119-128.

¹⁶ Rosalind Gould, "An Experimental Analysis of Level of Aspiration," Genetic Psychology Monographs, XXI (January, 1939), 1-116.

¹⁷ John W. Gardner, "Level of Aspiration in Response to a Prearranged Sequence of Scores," Journal of Experimental Psychology, XXV (December, 1939), 601-621.

Five increasing performances had a mean correlation of .55 for the discrepancy scores. Then, five performances regularly fell and showed a mean intercorrelation of .61. The means of the intercorrelation over the entire series, with the exception of the first two and last two trials, was .57.

Heathers¹⁸ gives us further experimental data concerning generality. She varied three factors so as to determine their effect upon generality. They were the scale or units in which the performance scores were presented to the subjects, the shape of the curve of the performance scores, and the motivation of the subjects. Prearranged scores were used. The subjects were asked what score they were going to try to make on the next trial. It was found that if the scale of units used to report the score and the shape of the performance curve are both the same in two tasks, the correlation of the discrepancy scores was .87. If the scale is different, although the curve is the same, the correlation was .67. The change in scale reduced the degree of generality. When the scale was constant and the curve varied, no significant differences were found. Correlations of generality were from .74 to .86. Heathers believes enough evidence is present to indicate that a change in the curve will effect generality if the contours are different enough to allow the subject to have different interpretations concerning the amount and rate of his improvement. Correlations from .35 to .74 were obtained when both the shape of the curve and the scale were varied. When they were both the same, the range was from .93 to .79. An intelligence test was given to another group of subjects. Prizes were offered for motivation purposes. The generality

¹⁸ Louise B. Heather, "Factors Producing Generality in the Level of Aspiration," Journal of Experimental Psychology, XXX (May, 1942), 392-406.

correlation coefficient was .93. A correlation of .84 was obtained for a comparable group not highly motivated. The average intercorrelation for tasks at the same session was .81 while for different sessions it was .62. Evidence exists that common factors, such as attitudes, present at a certain session, tend to make the results of that session more similar than the results of different sessions.

Rotter¹⁹ calculated test-retest generality after an interval of one month. The subject was rewarded for correct estimates and punished for incorrect estimates on a motor performance test. The coefficient was .46 for the number of times the subject reached or exceeded his estimate. Following success or failure in reaching the estimate the shifts up and down had a coefficient of .56 and frequency of shifts .70.

Hilgard and Sait²⁰ studied the effect of goal striving on one's perception of the past. Subjects estimated both their past and future performances. The conclusion was that goal striving did influence his perception of the past. Subjective distortion entered in both past and future estimates. Preston and Bayton²¹ asked their subjects what they actually expect to get, least they would be likely to get, and the most they would hope to get. It was found the generality of these estimates from task to task was high. A later paper shows the correlation between the least and

¹⁹ Julian B. Rotter, "Level of Aspiration as a Method of Studying Personality: II, Development and Evaluation of a Controlled Method," Journal of Experimental Psychology, XXXI (November, 1942), 410-422.

²⁰ Ernest R. Hilgard and Ernest M. Sait, "Estimates of Past and of Future Performances as Measures of Aspiration," American Journal of Psychology, LIV (January, 1941), 102-108.

²¹ Malcolm G. Preston and James A. Bayton, "Differential Effect of a Social Variable Upon Three Levels of Aspiration," Journal of Experimental Psychology, XXIX (November, 1941), 351-369.

actual, and least and maximum were negligible, while those between actual and maximum were .45 to .84.

A review of the literature indicates some consistency of behavior in motivated situations. The more realistic the situation the greater the generality. Some evidence exists that the subject responds more to the situation than to the task. Attitudes present at a certain session tend to make the results of one session more similar than the results of different sessions. A change in the units used to report the score made a statistically significant difference.

Success and Failure

Experimental work has proved the importance of the effect of success and failure. It may be said that generally if one reaches his level of aspiration, the level will be raised on succeeding trials. However, if the attainment discrepancy is negative, he will lower his level of aspiration. It should be remembered that what is considered as success or failure for one subject would not be the same necessarily for another subject. The stated level of aspiration does not frequently coincide with the true inner goal. What might appear to be failure for the subject could actually be success. The subjects will vary in their own ideas of what constitutes success and failure. To some it will be a definite specific experience while to others it will probably be more abstract or relative.

Jucknat²² used two series of ten mazes of a range of difficulty. One series of mazes was solvable and the other was not. In the solvable series the level of aspiration, in observed shifts of level of aspiration, 76 per cent were upward and 24 per cent were downward. In the nonsolvable series,

²² Lewin, op. cit., p. 338.

of the observed shifts, 84 per cent were downward and 16 per cent were upward. Thus, the general trend was followed. Jucknat gave a rating to the strength of success or failure judged to be felt by the subject. From this it appeared that the stronger the success, the greater will be the percentage raising of the level of aspiration; the stronger the failure, the greater the percentage lowering of the level of aspiration.

Jucknat further found transfer a factor by investigating the effects of success or failure in one task on the level of aspiration for a subsequent task. She used the same two mazes mentioned. One insured success; the other meant certain failure. The effects of the first maze experience influenced the level of aspiration in the other maze series. The magnitude of the effect depended upon the extent to which the second series is regarded as a continuation of the first series. If the success series followed the failure series, the level of aspiration for the second was lower than for the first. The reverse was true if the failure series followed the success series.

If the two series do not appear to constitute a single task, there is less transfer of reactions to the level of aspiration. If the two series appear to be closely related, the beginning level of the second is close to the end level of the first. But if the series appear different, the beginning level for the second is close to the beginning level for the first. The beginning level of the second is always between the first and final level of the first series.

Frank²³ has found that the level of aspiration on a "normal" task

²³ Jerome D. Frank, "The Influence of the Level of Performance in One Task on the Level of Aspiration in Another," Journal of Experimental Psychology, XVIII (April, 1935), 159-171.

differs according to whether it follows an easy activity or a hard one. The beginning level is higher when the normal task follows the easy activity than when it follows a hard one. The extent of the effect depended upon the degree to which the two tasks were objectively similar.

It has been determined by Hoppe in the 1930 experiment that an individual will set up goals near the limit of his ability. A certain task could ordinarily be performed in about eighty-eight seconds. He could not produce a feeling of failure by setting a goal of sixty seconds or less. These conditions caused the individual to set his own goal. Most of the cases had success or failure between the limits of 65 to 110 seconds. Hoppe found that there were forty-two cases of spontaneous stopping after a series of trials. Ten stopped after complete success when further raising of the level appeared impossible, twenty-three stopped after a series of failures, and one person stopped after one failure. Therefore, it is evident that a tendency exists to stop when the chances for success are not good.

A study of failure and success was performed by Sait²⁴ while studying changes in the level of aspiration. The experimenter varied the difficulty of the tasks and noted the effect upon the level of aspiration. It was found that the level of aspiration was effected by the difficulty of the material. It was found that the degree of difficulty of the task exerted more influence than the scores of other groups. Furthermore, those subjects experiencing increasingly difficult material tended to overestimate their progress. Those who had tasks that were increasingly easy had

²⁴ Ernest M. Sait, "Progressive Changes in the Level of Aspiration Within Learning," Psychological Bulletin, XXXV (October, 1938), 521-522.

the opposite tendency to underestimate their ability.

Farjans²⁵ investigated success and failure in children from one to four years of age and in infants of six months to one year. A considerable displacement of the level of activity was found. It was found that rather passive children were moved by success to a rather active kind of behavior, and rather active children can be reduced by failure to a rather passive kind of conduct. The results indicated that success means psychologically something essentially other in the infant than in the young child. Results indicated that the attainment of a substitute goal, a consolation, or an encouragement is, for the child, to a rather considerable degree, the equivalent of a genuine success.

Escalona²⁶ made an experimental study of the effect of success and failure upon the level of aspiration and behavior in manic depressive psychotics. In this experiment the subjects were patients at the Mount Pleasant State Hospital and the Iowa City Psychopathic Hospital. The tasks were arranged according to difficulty in two series. The tasks were somewhat similar to Jucknat's in that the subject's choice of the series indicated the level of aspiration. Escalona found that the hypomanic subjects entered the experimental situation freely and had a high beginning level of aspiration. They were very sensitive to success and failure. Consequently, they readily shifted their levels of aspiration in either direction according to the motivation. The excited manic subjects were often too distractable to maintain a goal idea, and in some cases refused

²⁵ Kurt Lewin, A Dynamic Theory of Personality, 252-254.

²⁶ Sibylle K. Escalona, "The Effect of Success and Failure Upon the Level of Aspiration and Behavior in Manic Depressive Psychoses," University of Iowa Studies in Child Welfare, XVI, No. III, 199-302. (1940)

to do the tasks for fear of failure. Their levels of aspiration were frequently shifted, although they were usually high on the first trial and then lower on all the others. The experimenter then considered speed of decision and speed of movements by means of quantitative measurements. Escalona classified the depressed type subjects as decision retarded, major decision retarded, motor retarded, and not retarded. By means of interviews, information was gathered concerning the development of the illness in comparing the motor retarded and decision retarded groups. In most cases the decision retardation developed in connection with an environmental conflict while the motor retarded subjects evidently had no such central environment conflict. The depressives, as a group, took more time to make choices and were less mobile in setting levels of aspiration. Escalona believed that they seemed less affected by success and failure in setting levels of aspiration than other factors such as duty and accepted social standards.

Sears²⁷ considered success and failure in pupils while studying arithmetic and reading and came to some interesting conclusions. She found that children who gave evidence of being negative goal discrepancy setters felt some lack of confidence in regard to achievement but showed a markedly general defensive, self protective reaction to situations in which they could experience failure in the presence of witnesses. Those who frequently have a low positive discrepancy score have a feeling of security in their achievement. Her conclusion concerning the high positive goal discrepancy scorers was that they could rather easily admit failure without

²⁷ Pauline S. Sears, "Level of Aspiration in Relation to Some Variables of Personality: Clinical Studies," Journal of Social Psychology, XIV (November, 1941), 311-336.

much damage to their ego, although they did feel somewhat insecure.

Adams²⁸ found that bids were increased following success more frequently than they were decreased following failure; he found that college students followed this tendency more than fourth grade pupils.

Barker, Dembo, and Lewin²⁹ conducted an experiment in which they found that regression resulted from interrupted children's play in an ideal situation. Apparently, the produced frustration affected the momentary implicit goals of the subjects. First, the children were allowed to play in an ideal situation. Later they were moved to a less attractive play situation. But the subjects could still view the ideal situation through the net partition. All of the subjects whose ages were two to five years, showed regression.

The regression was proportionally greater for the older subjects. The regression was shown by less differentiation of activity, a breakdown in organization of the individual resulting from conflict from several goals, and less distinct differentiation between reality and fantasy.

Group Influence

Investigations have been performed which show the influence on levels of aspiration by our culture in a rather general way. An individual's performance may be based on a reference scale of another individual, of the group to which he belongs, or of other groups. These influences may be considered as frames of reference which help the subject to determine his

²⁸ D. K. Adams, "Age, Race and Responsiveness of Levels of Aspiration to Success and Failure," Psychological Bulletin, XXXVI (July, 1939), 573.

²⁹ Roger G. Barker, Koumin and Wright, Child Behavior and Development, Chapter 16.

goal. This investigation would note the influences of various groups under several situations including a consideration of competition, achievement, and other possible factors.

Several studies have been made showing the effect of group factors. Anderson and Brandt³⁰ gave fifth grade children a series of six cancellation tests spaced a half week apart. By examining a graph each child could see how he stood in relation to the group. A child could not identify the position of any other child. Before a trial, each child was to write down privately the score he thought he could attain on the following trial. The subjects were grouped according to performance quartiles. For the upper quartile the average level of aspiration was 2.1 points above the performance level. For the lowest quartile the level was 13.6 points above the performance level. Thus, we have evidence that the lower quartile tends toward a rather large positive discrepancy score. The upper quartile tends toward a slightly positive discrepancy score. The correlation between discrepancy score and position of performance with respect to the group was .46. The results indicated that the lower the performance relative to that of the group, the larger the discrepancy.

Hilgard, Sait, and Magaret³¹ obtained the same result for college students. They performed an experiment and obtained three groups by giving problems of easy, medium, and hard difficulty. The subjects were told the score for each person in the group on the preceding trial in order from

³⁰ H. H. Anderson and H. F. Brandt, "Study of Motivation Involving Self Announced Goals of Fifth Grade Children and the Concept of Level of Aspiration," Journal of Social Psychology, X (May, 1939), 209-232.

³¹ Ernest R. Hilgard, E. M. Sait, and G. A. Magaret, "Level of Aspiration as Affected by Relative Standing in an Experimental Social Group," Journal of Experimental Psychology, XXVII (October, 1940), 411-421.

the best to the poorest. In this experiment all three groups started out with about the same amount of discrepancy score but by the last four trials the easy material group had a discrepancy score of -3.4 ; the group with the medium materials, a score of $+1.0$; and the group with the difficult problems had a score of $+4.2$. This work indicates a frame of reference in which the individual's performance is placed on the scale formed by the performances of his group. It is evident that the level of aspiration is influenced by the individual's knowledge of his standing relative to that of the group. The scores tended to regress toward the mean.

We may now assume that it is likely that the knowledge of performances of other groups may have an effect of a like kind. The first investigation of this nature was made by Chapman and Volkman.³² Groups of college students were given comparison scores of literary critics, students, and W. P. A. workers for a test of "literary ability." Unknown to the subjects the comparison scores were equal. The groups' heights of level of aspiration followed this sequence from lowest to highest: comparison with experts, no comparison, comparison with own student group, and comparison with the inferior W. P. A. group. The subjects had not yet taken the tests and so did not know their own scores.

Festinger³³ made further study of the influence of group standards. The college subjects had only their own previous scores to compare their present performance with a situation in which the score was made to appear either above or below a high school group, a college group, and a graduate

³² D. W. Chapman and J. Volkman, "A Social Determinant of the Level of Aspiration," Journal of Abnormal and Social Psychology, XXXIV (April, 1939), 225-238.

³³ Leon Festinger, "Theoretical Interpretation of Shifts in Level of Aspiration," Psychological Review, XLIX (May, 1942), 235-250.

group. As the comparison group increased in value, the positive valence of the goal discrepancy decreased. That is, when the subjects were told they had scored above a high school group, they had a small negative goal discrepancy score. This negative score became larger when the subjects were told they had scored above a college group, and still larger when they were told they had scored above a graduate group. When the subjects were told they had scored below the three groups, a positive goal discrepancy score resulted. This score was largest when the subjects were told they had scored below the high school group, and lowest when they were told they had scored below the graduate group.

Hertzman and Festinger³⁴ were interested in whether an individual would be affected by the aspiration of others as well as the performances of others. The experimenters used twenty male college undergraduates as subjects. After the first trial the subjects in the experimental group were given their discrepancy scores. Before the next trial each was given the average score and average level of an equivalent group. In each case the individual's score was equal to that of the group. The goal discrepancy of the group average was given as opposite in valence to that of the subject. This had a significant effect in that the changes in the level of aspiration were changes which enabled the students to conform to the group's level of aspiration.

There is experimental evidence showing that goal discrepancies are effected by various factors of a socio-economic nature. Gould³⁵ found that subjects with low discrepancy scores are those in a relatively more

³⁴ M. Hertzman and L. Festinger, "Shifts in Explicit Goals in a Level of Aspiration Experiment," Journal of Experimental Psychology, XXVII (October, 1940), 439-452.

³⁵ Rosalind Gould, "Some Sociological Determinants of Goal Strivings," Journal of Social Psychology, XIII (May, 1941), 461-473.

favorable social and economic standing, as compared with those with a high positive discrepancy score. Following are some of the factors that helped determine the size of the discrepancy score: more college training, income of the subject's father, birth of parents in this country, amount of time spent in working way through school, and expectancy of future large salaries.

Jucknat³⁶ discovered that habitual success or failure was another background factor influencing goal discrepancy. When her group of 500 was divided into those who were consistently good, medium, or poor students, differences in the level of aspiration of the groups were noted. Mazes were placed in an ascending order of difficulty. The good group had an initial level of aspiration rather high. The poor group had a level of aspiration either rather high or low.

This topic was further investigated by Gould and Lewis.³⁷ They were able to find evidence showing the influence of the social variable. The subjects were divided into three groups. The first group was given a score as being average for classmates. The second group was given the same score as average for college professors. The third group was given the same score as average for W. P. A. workers. No statistically reliable differences in performances were found for the three groups. The level of aspiration scores did show a reliable difference. The discrepancy scores were lowest for the group compared with the class average and highest for those compared to the W. P. A. workers.

³⁶ Kurt Lewin, op. cit., 343.

³⁷ Rosalind Gould and H. B. Lewis, "An Experimental Investigation of Changes in the Meaning of Level of Aspiration," Journal of Experimental Psychology, XXVII (October, 1940), 422-438.

McIntosh³⁸ made a study concerning Negroes and whites. This investigator found that whites tended to raise their estimations of their maximum and actual levels and hold their estimations of their least level constant when told that they were doing as well as a fictitious group of Negroes.

Preston and Bayton³⁹ performed a similar experiment. They determined that Negroes tended to lower their estimations of their least levels and hold their maximum and actual levels constant when they were informed that they were doing as well as a group of fictitious whites.

Pauline Sears⁴⁰ used children as subjects whose school experiences showed definite success or failure. This provided two groups. One group was a past success group, and the other was a past failure group. These children belonging to the past failure group showed a higher average discrepancy than those belonging to the past success group. The members of the past failure group showed great variability as reflected by the goal discrepancy scores which ranged from high positive scores to rather large negative scores. In contrast, the past success group showed little variability with a small positive range.

Sims⁴¹ worked with three groups. The tasks were letter number substitutions and speed of reading, given three times a week for three weeks.

³⁸ Archibald McIntosh, "Differential Effect of the Status of the Competing Groups Upon the Levels of Aspiration," American Journal of Psychology, LV (October, 1942), 546-554.

³⁹ Malcolm C. Preston and James S. Bayton, "Differential Effect of a Social Variable Upon Three Levels of Aspiration," Journal of Experimental Psychology, XXIX (November, 1941), 351-369.

⁴⁰ Pauline S. Sears, "Levels of Aspiration in Academically Successful and Unsuccessful Children," Journal of Abnormal and Social Psychology, XXXV (October, 1940), 498-536.

⁴¹ V. M. Sims, "The Relative Influence of Two Types of Motivation on Improvement," Journal of Educational Psychology, XIX (October, 1928), 480-484.

The members of one group scored their own tests. Another group was divided into two subgroups for the purpose of group competition. The group scores were compared on a graph. The final group was paired according to ability so as to afford individual competition. It was found that the last group was greatly superior.

Most of the already-mentioned research makes evident the importance of revealing to the subject his progress. Little or no progress was made until the subject was given a knowledge of his results. When this was done considerable improvement was noted. An early experiment in 1922 by Book and Norvell⁴² showed the importance of revealing the subjects' progress.

An investigation by Brown⁴³ involved arithmetic drill. When a group was told the previous results and recorded the scores on a graph, higher scores were made than when the subject was not given his previous scores. The use of the graph was considered, by the investigator, as being an additional incentive.

Personality Traits

The literature shows that little objective information has been obtained concerning personality traits and various factors that influence the choice of a goal.

Gould and Kaplan⁴⁴ found only low correlations between discrepancy scores for six tasks and scores for dominance feeling by Maslow inventory,

⁴² W. F. Book and L. Norvell, "The Will to Learn," Journal of Genetic Psychology, XXIX (December, 1922), 305-312.

⁴³ F. J. Brown, "Knowledge of Results as an Incentive in School-Room Practice," Journal of Educational Psychology, XXXIII (October, 1932), 532-552.

⁴⁴ Rosalind Gould and N. Kaplan, "The Relationship of Level of Aspiration to Academic and Personality Factors," Journal of Social Psychology, XI (February, 1940), 31-40.

and extraversion-introversion (Guilford). The correlations were from minus .17 to plus .21.

Gardner⁴⁵ compared discrepancy scores with ratings for personality traits. The correlations were uniformly low. The differences between the high, medium, and low groups were too small to be regarded as statistically significant. Some trends were observed which were interesting. The ten subjects with the highest discrepancy scores were rated highest in dissatisfaction with status and importance attached to intellectual achievement. The lowest ten were rated lowest on motivation and highest on fear of failure.

The Sears report⁴⁶ showed she studied small groups of children highly motivated for school work. They had been highly successful or unsuccessful in school. Factors appeared when they were divided according to size of discrepancy scores for school tasks. Those with high discrepancy scores were lowest in scholastic achievement. They readily admitted their incompetence and showed the attitude of low self-confidence. Those with low positive discrepancy scores were successful and confident. They, apparently, possessed fewer poor personality traits and were not behavior problems. The negative discrepancy group was in between the high and low positive discrepancy group in both confidence and academic success. They ranked highest in self-consciousness, social motivation, defensiveness, and self-protection in their attitudes toward failure.

⁴⁵ John W. Gardner, "The Relation of Certain Personality Variables to Level of Aspiration," Journal of Psychology, IX (January, 1940), 191-206.

⁴⁶ Pauline S. Sears, "Level of Aspiration in Relation to Some Variables of Personality: Clinical Studies," Journal of Social Psychology, XIV (November, 1941), 311-336.

Another study considering personality traits was made by Yacorzynski.⁴⁷ He studied the relationship between degree of effort and the direction of the aspiration level. He found that an increasing degree of effort is associated with a decreasing number of predictions that the scores will improve. Yacorzynski believes that confidence of the subject in his ability may increase predictions of improved scores on successive trials and also decrease the amount of effort shown.

Gruen⁴⁸ compared scores on Roger's test of personality adjustment with discrepancy scores for thirty-two seventh and eighth graders. The task was that of letter-symbol substitution. The subjects were classified as well adjusted and maladjusted. Only in the maladjusted group did negative discrepancy scores appear. The maladjusted group deviated more from the individual mean discrepancy score than the adjusted group. This was statistically significant. The maladjusted subjects voiced evidence of insecurity and of a need to raise goals after failures to compensate for not being successful. The well adjusted did not tend to compensate for failure by raising their estimates.

Hanawalt, Hamilton, and Morris⁴⁹ made a study of level of aspiration behavior in college leaders and non-leaders. On the average, leaders set higher levels of aspiration than non-leaders. The investigators believed

⁴⁷ G. K. Yacorzynski, "Degree of Effort: III, Relationship to the Level of Aspiration," Journal of Experimental Psychology, XXX (May, 1942), 407-413.

⁴⁸ Emily W. Gruen, "Level of Aspiration in Relation to Personality Factors in Adolescents," Child Development, XVI (December, 1945), 181-188.

⁴⁹ Nelson G. Hanawalt, Carol E. Hamilton, and M. Louise Morris, "Level of Aspiration in College Leaders and Non-Leaders," Journal of Abnormal and Social Psychology, XXXVIII (October, 1943), 545-558.

that factors which make for an open, mildly optimistic statement of a goal are also factors which favor selection for posts of responsibility in extra-curricular affairs.

Effect of Various Instructions

It has been found that the manner in which an individual is asked to state his goal affects the stated level of aspiration. Gould⁵⁰ asked the question, "What will you do next time?" In answer to this question there existed three classes of interpretations. One group set their level of aspiration at a minimum of possibility, another group set their level at a maximum, and the final group set their level at about the average of their performance.

Frank⁵¹ found that the question, "What do you think you will do?" influenced the subjects to try to come closer to their estimates than the question, "What do you intend to do?"

Festinger⁵² conducted an investigation in which the subjects were asked, "What do you think you will get next time, that is, what score do you expect to get on the next test?" In another experiment the subjects were asked, "What score would you like to get next time, that is, what do you intend to get on the next test?" The first group is referred to as the "realistic" group and the second group as the "wishful" group. Some subjects were told that they scored above a fictitious group. Others were

⁵⁰ Rosalind Gould, "An Experimental Analysis of Level of Aspiration," Genetic Psychological Monographs, XXI (January, 1939), 1-116.

⁵¹ Jerome D. Frank, "A Comparison Between Certain Properties of the Level of Aspiration and Random Guessing," Journal of Psychology, III (January, 1936), 43-62.

⁵² Leon Festinger, "Theoretical Interpretations of Shifts in Level of Aspiration," Psychological Review, XLIX (May, 1942), 235-250.

told that they had scored below a fictitious group. Part of the subjects scoring above and below the fictitious group were told that the group was composed of high school students, another part were told that the group was composed of college students, while another part were told that the group was composed of graduate students. It was found that the realistic group shifted. The wishful group showed greater shifts when placed above a group than when placed below, while the realistic group shifted equally for both positions. The wishful group shifted less when below the other group probably because of less reaction to failure. The realistic group uniformly raised their discrepancy scores when scoring below one of the three fictitious groups.

Irwin and Mintzer⁵³ conducted an experiment in which one group, the "expect" group, was asked, "What is your prediction for the next trial?" Another group, known as the "hope" group, was asked, "What score do you hope to make on the next trial?" These variations in instructions caused a large variance in discrepancy scores. The "hope" group had positive goal discrepancy scores much larger than the "expect" or "realistic" group. The "realistic" group showed a greater number of changes in the level of aspiration from one trial to the next. The authors believe it is better to ask the subjects to state the goal or what is to be achieved rather than mere expectations.

Holt⁵⁴ made an investigation in which he asked one group to write on the paper the letter grade that they thought they would actually make.

⁵³ Francis W. Irwin and Marcia G. Mintzer, "Effect of Differences in Instruction and Motivation Upon Measures of the Level of Aspiration," American Journal of Psychology, LV (July, 1942), 400-408.

⁵⁴ Robert R. Holt, "Level of Aspiration, Ambition or Defence?" Journal of Experimental Psychology, XXXVI (October, 1946), 398-416.

To the other group, instructions were given to write on the paper a letter grade representing the grade that was wanted or the goal for the coming exam. The mean of the discrepancy scores for the "goal" group was more than twice as large as that of the "expectation" group.

This research indicates that those groups termed as "realistic" in attitude would make a small goal discrepancy score and the level of aspiration was responsive to the situation. The "unrealistic" group had a large discrepancy score and their level of aspiration would not respond to success or failure in the situation properly.

CHAPTER III

PROCEDURE

Preliminary Experimentation

This chapter is divided into four sections. The first section concerns the preliminary experimental work which helped to define the problem and to design an adequate experiment. Next is given information concerning the students who participated in the experiment. Following a description of the task used in the experiment is a detailed account of the procedure.

(A group of about forty students was used in preliminary experimentation. They were then divided into four subgroups.) Various procedures were used to determine the most successful means of administration. This gave much valuable information concerning techniques, number of problems worked in definite periods of time, etc. Little correlation was evident between accuracy and number of problems worked. In accordance with a plan widely followed, simple arithmetic addition combinations were used. The simple nature of such tasks makes the accomplishment a good indication of effort and general interest.⁵⁵ Work with this preliminary group substantiated these beliefs. Even those who disliked mathematics testified that they felt no aversion toward the problems, probably because of their simplicity. Or, if they did at first, they quickly gained confidence on becoming acquainted with the nature of the problems. Most members of this group were questioned as to their reactions concerning various parts of

⁵⁵ Herbert Sorenson, Psychology in Education, pp. 302-303.

the experiment. Most accepted the situation as it was presented to them. The subjects were told that the entire situation was a psychological experiment. Although a few expressed the belief some trickery was connected with the experiment. A few said that they could not determine the reason for conducting an experiment of this type and it therefore appeared somewhat foolish although they cooperated to the best of their ability. Others indicated that it was just another part in their daily routine with no more particular significance than that of preparing another assignment. No doubt, these are representative of natural reaction patterns dependent upon various personality types.

Various time intervals were used in the preliminary experimentation. These intervals were from one minute to fifteen minutes. Five minute intervals appeared to be the shortest interval to give the most consistent results. Most of the members of this group were of the opinion that it took this long for them to receive a fair trial for any one sitting. With some of the subjects, after ten minutes efficiency began to suffer noticeably under motivated conditions. Apparently, a condition of tenseness became more acute during longer intervals. When scores were manipulated it was determined that the scores should increase or decrease by at least ten per cent, or success or failure would not be adequately experienced.

So, by following a variety of plans, the problem became clearer and the more accurate procedures were discovered.

Subjects

The subjects were one hundred and twelve psychology students at Will Rogers High School in Tulsa, Oklahoma. More students started the experiment but were dropped from consideration because of withdrawal from the

class or extended absence. All of these students were seniors in the experimenter's classes. These one hundred and twelve subjects comprised four classes. From this point on the classes are referred to as groups. No student was forced to participate in the experiment against his wish. After the nature of the experiment was explained, the subjects were told that only those who wished to do so should engage in the activities. All expressed a willingness to take the next trial by asking how long they would have to wait until the next trial would be administered. Those who missed a trial because of absence, were very anxious to attend a session to make up the trial missed.

The Task

As previously mentioned, the task for this experiment consisted of simple one-column addition problems consisting of four integers. Fifty problems were arranged in five columns of ten problems each, on each sheet. The problems were simple enough to overcome most aversions to this type of work. The performance could be accurately and objectively checked in a short period of time. These problems were chosen so all of the answers were from sixteen to twenty-four. These four integers in each problem can be manipulated to produce twenty-four problems of different sequence. In this manner a total of two thousand one hundred sixty problems are available. Since results were reported in terms of accuracy the problems fit nicely into the plan of manipulating reported results. The subjects were allowed five minutes in which they were to complete as many problems as they could under the conditions.

Procedure

The one hundred twelve subjects were divided into four groups. Before the first trial the subject's name was written on the several sheets.

of problems that were placed on his desk face down. The first trial was the same for all of the groups. All were told to do the best they could but not to go so rapidly that their accuracy would suffer. They were also advised not to rework problems as this plan had been found to do more harm than good. At the signal to begin, the subjects turned the sheets right side up and proceeded to work until they were told to lay down their pencils five minutes later. The papers were then collected, completing trial one.

~~Two weeks later the subjects were permitted to take the second trial.~~ Again the subjects were presented problems with their names written on the sheets. On each sheet was a number which was the score made on the first trial. The subjects were then asked to set a goal for this trial and to write the number on the back of the sheet. Up to this point, through the second trial, all worked under the same conditions of motivation. The subjects were not motivated by success or failure and were not entered in any type of competition.

The only provided motivation for trial two was the knowledge of the score made on trial one. (Trial three was the first trial that was experienced in terms of success or failure.) For this reason Table I begins with the third trial. Trial three was taken two weeks after the second trial. Starting with trial three the subjects followed one of four possibilities. / Groups one and two experienced self competition and competed with their previous scores. Groups three and four experienced group competition and competed with the averages of the fictitious groups. (Approximately half of the subjects in each group had been told they had been successful and the other half had been told that they were failures.) The approximate half of each group that experienced success on trial three formed subgroup "A". The remaining half formed subgroup "B". On trial four the situation

was reversed. That is, those who were told that they failed on trial three had success on trial four and those who had success on trial three failed on trial four. Beginning with trial five those experiencing group motivation changed to self motivation and those experiencing self motivation changed to group motivation for the next two trials. Groups one and two were experiencing group motivation while groups three and four were experiencing self motivation. In this manner all of the subjects experienced the same experimental situation although not all in the same sequence.

The purpose of this investigation was to study the effect of success and failure in two kinds of motivation. In self competition the subject was told the goal he had previously set and a fictitious score representing accuracy which was ten per cent above or below the goal he had previously set. If the fictitious score was below the goal an "F" was placed on his paper. This indicated that the student had failed to achieve his goal. If the fictitious score was larger than the goal an "S" was placed on the paper to indicate that the subject had experienced success in achieving his goal. At each trial the subject was reminded of the significance of the letters.

Another type of competition was a group competition. In one type of group competition the individual works only as a member of his group when it is in competition with another group. The type of group competition used in this investigation does not allow the individual to lose his personal identity even though competing as a member of a group. This situation can exist because the subject is in competition with the group of which he is a member. This is the type of competition usually found in the classroom. In assigning marks a very large determining factor is the success the individual has in competing with the group of which he is a

TABLE I
KIND OF COMPETITION AND MOTIVATION

Groups	Trial	Subgroup	Competition	Motivation
I and II	3	A	Self	S
		B	"	F
	4	A	"	F
		B	"	S
	5	A	Group	S
		B	"	F
	6	A	"	F
		B	"	S
III & IV	3	A	"	S
		B	"	F
	4	A	"	F
		B	"	S
	5	A	Self	S
		B	"	F
	6	A	"	F
		B	"	S

member. In classroom situations seldom does the student lose his personal identity, except perhaps, when in engaging in contests. This investigator believes it is much more practical for the subject not to lose his individualism while participating in the group competition.

When the subject received the papers containing the task, he found his previous score and a score which was the average of the group. This score represented the average of a fictitious group of twenty-five. The subject was told he was a member of this group. The subject's score was given to him as ten per cent above the fictitious group average if the individual was to experience success and ten per cent below the group average if he was to experience failure. Preliminary experimentation showed this figure to be adequate in this particular study. Again, the letters "S" and "F" were used so as to enable a more definite feeling of success or failure.

CHAPTER IV

THE RESULTS

Description of the Groups

Table II gives information concerning the general makeup of the groups that were used in this investigation. The groups were the investigator's four classes in psychology at Will Rogers High School in Tulsa, Oklahoma.

TABLE II
GENERAL MAKEUP OF THE GROUPS

Group	Number	Sex		Av. Yr.	Age Mo.	Av. Otis I. Q.
		F	M			
I	36	32	4	17	8	107.6
II	27	22	5	17	6	106.8
III	16	13	3	17	3	110.2
IV	33	31	2	17	6	106.4
Totals	112	98	14			
Averages				17	5.75	107.75

Table II indicates considerable similarity of the four groups. The greatest difference between the groups in average Otis I. Q. is only three and eight tenths. The difference between sexes within each group is quite large. Each group contains a heavy majority of females. This factor could not be controlled because of the large enrollment of females in psychology. Apparently, there is no definite evidence to show any

statistical difference in behavior between the sexes in level of aspiration situation experiments.

Achievement

Table III gives the means, standard deviations, and ranges of the scores made by the groups:

TABLE III
MEANS, STANDARD DEVIATIONS, AND RANGES OF THE SCORES
OF THE GROUPS

Group	Trial	Mean	S. D.	Range
I	1	63.277	14.700	58
	2	63.111	15.505	65
	3	68.055	16.335	69
	4	68.110	18.715	84
	5	68.944	17.325	80
	6	73.396	18.690	76
II	1	62.371	13.535	62
	2	64.871	13.730	53
	3	67.708	15.555	55
	4	69.986	16.420	52
	5	72.042	16.890	58
	6	74.764	14.615	67
III	1	76.688	15.255	71
	2	82.188	22.500	108
	3	81.188	26.055	81
	4	88.188	28.910	97
	5	91.688	32.690	92

TABLE III (Continued)

Group	Trial	Mean	S. D.	Range
III	6	89.063	29.750	98
IV	1	61.545	17.205	66
	2	64.591	19.035	64
	3	72.112	20.030	85
	4	73.617	22.560	99
	5	73.813	24.010	95
	6	75.236	23.110	90

Group three maintained the highest means. Trial one of this group has a larger mean than trial six of any other. Group three maintained the largest standard deviations of the scores. Also, this group had the largest ranges in the scores. Next to group three, group four has the highest standard deviations and ranges. Group two has the smallest standard deviations and ranges. Group three was the only group to show a smaller final mean than was obtained on a previous mean.

Table III indicates an increase in the size of the scores from trial to trial. As already explained all four groups had the same experience but in different sequence. Thus, it seems to be quite likely that the increase in the scores is caused by greater familiarity with the task.

Achievement Gains

TABLE IV

MEANS, STANDARD DEVIATIONS, AND RANGES OF THE ACHIEVEMENT GAINS

Group	Trial	Mean	S. D.	Ranges
I	2-1	-0.166	6.630	26
	3-2	+4.944	6.808	25
	4-3	+0.034	7.054	35
	5-4	+0.834	7.062	28
	6-5	+4.452	6.242	26
	Average	+2.0196	6.7592	28.00
II	2-1	+2.500	7.056	30
	3-2	+2.837	6.110	23
	4-3	+2.278	6.482	30
	5-4	+2.056	6.402	24
	6-5	+2.722	5.012	20
	Average	+2.479	6.2125	25.40
III	2-1	+5.500	11.612	38
	3-2	-1.000	8.696	39
	4-3	+7.000	9.532	31
	5-4	+3.500	10.310	49
	6-5	-2.625	8.092	32
	Average	+2.475	9.648	37.80
IV	2-1	+3.046	8.366	29
	3-2	+7.521	6.738	25
	4-3	+1.505	5.372	21
	5-4	+0.196	6.346	28
	6-5	+1.423	8.635	51
	Average	+2.738	7.091	30.80

Table IV shows the means, standard deviations, and ranges of the achievement gains. The table shows a small but rather consistent increase in achievement from trial to trial. Group four showed the greatest positive motivation by having the largest achievement gain of any group, and group one the smallest gain. Group three showed the greatest average standard deviation and the greatest average range.

The achievement gains were obtained by subtracting the score for a trial from the score made on the next trial. If the former score was larger than the latter score the difference was negative. All of the trial means were positive with the exception of one instance in group one and twice in group three. The improvement, from trial to trial, was most consistent for group two. The improvement for each trial was between two and three points for group two. The first mean of each group represents a gain or loss between trials not motivated by success or failure. In the other trials this motivational factor was present. But, Table IV has the success and failure gains combined as one score. It then becomes necessary to divide the gains of each trial into failure and success gains. For example, group one was composed of thirty-six subjects. Of this number, seventeen experienced success and nineteen experienced failure before setting the level of aspiration for that trial. The effects of failure and success become more evident when the gains are given for the success and failure subgroups.

Table V shows the achievement gains of each trial of each group expressed in terms of success and failure.

TABLE V
MEANS AND STANDARD DEVIATION OF ACHIEVEMENT GAINS
FOR THE SUCCESS AND FAILURE SUBGROUPS

Group	Trial	Success or Failure	No.	Mean	S. D.
I	3-2	S	17	+5.118	5.086
	"	F	19	+4.521	7.676
	4-3	S	19	+ .579	5.622
	"	F	17	- .646	8.290
	5-4	S	17	+2.765	6.806
	"	F	19	- .789	6.926
	6-5	S	19	+7.263	3.957
	"	F	17	+1.176	2.227
II	3-2	S	13	+1.776	6.592
	"	F	14	+3.937	5.354
	4-3	S	14	+5.432	4.274
	"	F	13	- .462	6.406
	5-4	S	14	+3.500	5.438
	"	F	13	+ .615	6.944
	6-5	S	13	+2.156	6.394
	"	F	14	+3.000	4.276
III	3-2	S	8	+ .500	10.018
	"	F	8	-2.500	8.148
	4-3	S	8	+7.500	9.950
	"	F	8	+6.500	7.772

TABLE V (Continued)

Group	Trial	Success or Failure	No.	Mean	S. D.
III	5-4	S	8	+1.000	14.204
	"	F	8	+8.000	8.040
	6-5	S	8	- .750	5.826
	"	F	8	-4.500	8.994
IV	3-2	S	18	+8.674	6.690
	"	F	15	+6.500	7.118
	4-3	S	15	+2.234	5.208
	"	F	18	+1.333	4.864
	5-4	S	17	- .616	7.368
	"	F	16	+1.000	5.408
	6-5	S	16	+2.876	8.430
	"	F	17	+ .030	8.692

It should be noted that the first entry for each group in Table IV is omitted in Table V. This is necessary because there existed no success or failure conditions to influence the first gain. An examination of Table V shows that in only four out of sixteen possibilities was the failure mean more positive than the success mean. Or, in seventy-five per cent of the cases the larger achievement gain mean was for the success subgroup. Table V reports thirty-two means with only seven having a negative sign. Only two of the negative means represented groups that had experienced success while the other five negative means were for failure groups. Also of interest is the rather small comparable sizes of the negative means for

the gains. It is indicated that greater achievement gains were made under conditions of success rather than during conditions of failure. This will become more apparent in subsequent tables.

Table V provided opportunity for comparing some of the effects of failure and success but was of no value in giving information concerning the effects of the two different kinds of competition. Tables VI and VII are rearrangements of parts of Table V, so as to show more clearly certain relations. Table VI shows the success and failure subgroups when they experienced self competition.

TABLE VI

MEANS OF ACHIEVEMENT GAINS FOR SUCCESS AND FAILURE SUBGROUPS
IN SELF COMPETITION

Group	Trial	Success		Failure	
		No.	Mean	No.	Mean
I	3-2	17	+5.118	19	+4.521
	4-3	19	+0.579	17	-0.646
II	3-2	13	+1.776	14	+3.937
	4-3	14	+5.432	13	-0.462
III	5-4	8	+1.000	8	+8.000
	6-5	8	-0.750	8	-4.500
IV	5-4	17	-0.616	16	+1.000
	6-5	16	+2.876	17	+ .030

Table VII shows the success and failure subgroups when they experienced group competition.

TABLE VII
MEANS OF ACHIEVEMENT GAINS FOR SUCCESS AND FAILURE SUBGROUPS
IN GROUP COMPETITION

Group	Trial	Success		Failure	
		No.	Mean	No.	Mean
I	5-4	17	+2.765	19	-0.789
	6-5	19	+7.263	17	+1.176
II	5-4	14	+3.500	13	+0.615
	6-5	13	+2.156	14	+3.000
III	3-2	8	+0.500	8	-2.500
	4-3	8	+7.500	8	+6.500
IV	3-2	18	+8.674	15	+6.500
	4-3	15	+2.234	18	+1.333

A comparison of Tables VI and VII shows trends which will be more plainly seen in a later interpretation. Table VI, containing the self competition subgroups, has five negative means with two of them belonging to success subgroups and three of them belonging to failure subgroups. The group competition subgroups, as shown in Table VII, have only two subgroups with negative means and both of them belong to failure subgroups. This indicates better performance by the group competition success subgroups than by the self competition success subgroups with probably little difference between the failure subgroups. Also, there appears to be little to distinguish between success and failure for the self competition subgroups.

Table VIII combines the information concerning achievement gains still further. The table gives the total achievement gain points for all

the subjects in each one of the four possible different situations. The achievement gain mean is calculated for each situation, the standard error of the mean and the standard deviation. With the information in this condensed form trends can be clearly seen and treated for statistical significance.

Table VIII gives the total achievement gain and other statistics for all the success and failure experiences under both types of competition.

TABLE VIII
TOTALS FOR ACHIEVEMENT GAINS

Competition	Motivation	No.	Total Points	Mean	S.E. of Mean	S. D.
Self	Success	112	232	+2.071	.707	7.485
"	Failure	112	173	+1.545	.785	8.305
Group	Success	112	519	+4.634	.692	7.320
"	Failure	112	213	+1.902	.649	6.875

In both instances the total points for those experiencing success was greater than for those experiencing failure. Fifty-nine more points were made by those experiencing success than by those experiencing failure in the self competition. Three hundred six more points were made by the success subgroup than the failure subgroup in the group competition. In the latter case the critical ratio is 2.77 (D/σ_d) which is significant beyond the one per cent level. No statistically significant difference existed between the groups experiencing failure. The critical ratio for the two success groups is 2.59 which is significant beyond the one per cent level.

Table VII shows rather clearly that success in this experiment has greater positive motivational force than failure. Also it shows that the competition in which the subject was competing against the group, caused greater motivation than self competition. Those who experienced failure in group competition made a higher point total than those who experienced failure in self competition. This difference amounted to forty points.

Goal Discrepancy Scores

Table IX gives the data concerning the goal discrepancy scores. It was possible to obtain five such scores for each experimental group. The discrepancy score was obtained by subtracting the score of the previous performance from the level of aspiration, as reflected by the goal, for the following performance. If the goal was larger than the score of the previous performance, then the goal discrepancy score is positive. But, if the goal is smaller than the previous performance the goal discrepancy score is negative. In this table each group is considered as a whole. That is, the success and failure subgroups are not treated individually.

TABLE IX

MEAN, STANDARD DEVIATION, AND RANGES
OF THE GOAL DISCREPANCY SCORES

Group	D. Score	Mean	S. D.	Range
I	1	+1.860	8.001	47
	2	-2.604	5.722	24
	3	-1.220	4.114	21
	4	-4.452	7.218	32
	5	-3.780	3.892	17
Average		<u>-2.039</u>	<u>5.789</u>	<u>28.2</u>

TABLE IX (Continued)

Group	D. Score	Mean	S. D.	Range
II	1	+1.018	7.824	37
	2	-1.426	4.840	24
	3	0.000	3.336	14
	4	-4.850	10.105	38
	5	-7.202	10.062	39
	Average	<u>-2.492</u>	<u>7.235</u>	<u>30.4</u>
III	1	+0.813	4.582	18
	2	+1.625	6.122	26
	3	+1.750	5.952	25
	4	-2.313	3.583	11
	5	-0.250	6.924	27
	Average	<u>+0.325</u>	<u>5.433</u>	<u>21.4</u>
IV	1	+4.136	6.446	35
	2	+2.076	4.690	20
	3	-1.864	6.776	30
	4	+0.592	4.628	19
	5	-0.703	5.096	26
	Average	<u>+0.347</u>	<u>5.527</u>	<u>26</u>

The first goal discrepancy score of each group was obtained by subtracting the score made on trial one from the goal set for trial two. The fifth D score was obtained by subtracting the score made on trial five from the goal set for trial six.

The first goal discrepancy score of each group was not obtained from a motivated situation while the other four were obtained under motivated situations. All of the first goal discrepancy scores of the various groups have a positive sign indicating a tendency to raise the goal above the last performance.

The group averages indicate homogeneity of the groups in regard to the factors that determine the goal discrepancy scores. The group averages of the mean vary slightly under three points. The standard deviations vary less than two points and the extremes of the range are only nine points apart. The low positive or slightly low negative goal discrepancy subject is usually considered as a confident, realistic, and a successful type of individual. This realistic viewpoint permits little variation between performance and the level of aspiration. On this basis it might be said that group three and group four are the more realistic since their average goal discrepancy scores are closer to zero.

Table X breaks each trial down into its constituent parts, the success and failure subgroups, and gives information concerning the goal discrepancy scores.

TABLE X

MEANS AND STANDARD DEVIATIONS OF GOAL DISCREPANCY SCORES
FOR SUCCESS AND FAILURE SUBGROUPS

Group	D. Score	Success or Failure	No.	Mean	S. D.
I	D 2	S	17	-4.442	5.574
	D 2	F	19	-1.078	5.566
	D 3	S	19	-3.000	2.384
	D 3	F	17	+ .352	4.614

TABLE X (Continued)

Group	D. Score	Success or Failure	No.	Mean	S. D.
I	D 4	S	17	-4.558	6.830
	D 4	F	19	-4.658	7.876
	D 5	S	19	-3.368	3.386
	D 5	F	17	-4.294	4.211
II	D 2	S	13	-3.539	1.781
	D 2	F	14	+ .358	6.022
	D 3	S	14	-1.357	1.949
	D 3	F	13	+1.461	3.587
	D 4	S	14	-3.642	9.054
	D 4	F	13	-5.500	10.436
	D 5	S	13	-7.038	10.172
	D 5	F	14	-7.358	9.954
III	D 2	S	8	+2.250	3.455
	D 2	F	8	+1.000	7.730
	D 3	S	8	- .750	6.310
	D 3	F	8	+4.375	4.181
	D 4	S	8	-2.375	3.039
	D 4	F	8	-2.250	4.054
	D 5	S	8	-3.250	3.875
	D 5	F	8	+2.750	7.964
IV	D 2	S	18	+1.611	4.084
	D 2	F	15	+2.600	3.666
	D 3	S	15	- .667	5.256
	D 3	F	18	-2.834	7.730
	D 4	S	17	-1.940	2.589
	D 4	F	16	+3.125	3.672
	D 5	S	16	-4.250	3.455
	D 5	F	17	+2.824	3.682

Table X presents the information in the correct time sequence for each group. But one will get a better appraisal of the motivational forces by a rearrangement of the table as is done later. Only eleven out of thirty-two mean goal discrepancy scores were positive and all were made by failure subgroups except in two instances. All but three of the eleven positive goal discrepancy scores were made in group three and group four. Only two success subgroups have a positive goal discrepancy score. In these two cases, the interpretation is that success was experienced to such a large extent that the level of aspiration was raised above, not only the past goal, but also, the last score.

It now becomes necessary to list the goal discrepancy scores in tables so as to separate the self competition subgroups from the group competition subgroups.

Table XI gives information concerning the success and failure subgroups when they experienced self competition.

TABLE XI

MEANS OF GOAL DISCREPANCY SCORES FOR SUCCESS AND FAILURE
SUBGROUPS IN SELF COMPETITION

Group	D. Score	Success		Failure	
		No.	Mean	No.	Mean
I	2	17	-4.442	19	-1.078
	3	19	-3.000	17	+ .852
II	2	13	-3.539	14	+ .358
	3	14	-1.359	13	+1.461
III	4	8	-2.375	8	-2.250
	5	8	-3.250	8	+2.750
IV	4	17	-1.940	16	+3.125
	5	16	-4.250	17	+2.824

In self competition the subject was given the goal he had set on the previous trial and a fictitious score which was either ten per cent above or ten per cent below the set goal depending on whether success or failure was to be experienced. These three factors of success or failure, the previously set goal, and the previous achievement probably were most important in structuring the dynamic field that produced the next level of aspiration. In success the last achievement was a higher number than the goal set for that trial. A tendency to average the two figures would make the next goal somewhat higher than the previous goal but somewhat less than the previous achievement score. In this manner would be produced a negative discrepancy score.

In failure the previously set goal is a larger number than the previous achievement. A tendency to average the score and goal would produce a new goal lower than the other goal but larger than the former achievement score. In this manner would be produced a positive goal discrepancy score. A brief examination of Table XI confirms these conclusions. All of the success means have a negative sign and all but two of the failure means have a positive sign. The average of the success means is a larger negative number than the average of the failure means is a positive number. This indicates little tendency for the success subgroups to raise their level of aspiration above the achievement level of their last performance. Two of the subgroups experienced failure deeply enough to lower their level of aspiration below their previous performance as well as below the previously set goal.

Table XII shows the success and failure subgroups when they experienced group competition.

TABLE XII
MEANS OF GOAL DISCREPANCY SCORES FOR SUCCESS AND FAILURE
SUBGROUPS IN GROUP COMPETITION

Group	D. Score	Success		Failure	
		No.	Mean	No.	Mean
I	4	17	-4.558	19	-4.658
	5	19	-3.368	17	-4.294
II	4	14	-3.642	13	-5.500
	5	13	-7.038	14	-7.358
III	2	8	+2.250	8	+1.000
	3	8	- .750	8	+4.375
IV	2	18	+1.611	15	+2.600
	3	15	- .667	18	-2.834

In group competition three factors to be considered as helping to structure the field would be whether success or failure was experienced, the last score, and the fictitious group average. This would again indicate that the success situations would produce a negative discrepancy score and the failure situations a positive discrepancy score. Table XII indicates that such is true for the success groups but those that experienced failure have more groups with negative means than groups with positive means. Only two subgroups experienced success enough to raise the level of aspiration above their previous achievement as well as above the previously set goal.

Table XIII gives information concerning the discrepancy scores based on the total number of subjects experiencing success and failure under conditions of self competition and under conditions of group competition.

TABLE XIII
TOTALS FOR GOAL DISCREPANCY SCORES

Competition	Motivation	No.	Total Scores	Mean	S. E. Mean	S. D.
Self	Success	112	-342	-3.530	.334	3.535
"	Failure	112	+ 87	+1.082	.481	5.095
Group	Success	112	-256	-2.285	.672	7.115
"	Failure	112	-324	-2.893	.801	8.480

Table XIII gives some interesting information. First, in the self competition, the success negative total score is approximately four times larger than the positive total is for the failure motivation students, although the self competition failure group is the only one with a positive total. It was noted on the first goal discrepancy score that none of the groups had a characteristic negative discrepancy score. In the success motivation situations the goals were generally raised, but they were usually smaller than the previous performance, thus giving negative goal discrepancy scores. It must be remembered that in the success situations the smaller the negative total goal discrepancy score the more success was experienced by the students. Failure was evidently more keenly felt than success. Great motivation due to success would produce a positive goal discrepancy score. Table XIII shows no large positive goal discrepancy score, but a pronounced feeling of failure would cause the next goal to be set below the previous score overcoming any urge to average the previous goal and the previous score. This would produce a goal lower than either of the two given figures and a negative goal discrepancy score.

The critical ratio for the success and failure subgroups in self competition is 7.02. This, of course, is highly significant and to be expected. But no significant difference exists between the success and failure subjects of the group competition. This is due to the negative goal discrepancy score of the failure group. The critical ratio between the self failure subjects and group failure subjects was highly significant at 4.26. The evidence appears rather conclusive that failure was experienced more deeply during the group type of competition with little difference between the different success motivational situations.

Analysis of the Factors Influencing the Level of Aspiration

The study on the goal discrepancy score gave some insight concerning the relationship between the previous performance and the next level of aspiration.

Table XIV gives data about the self competition group in regard to goal differences. Goal differences are obtained by subtracting the goal set for the previous trial from the goal set for the next trial. If the new goal is larger than the previous goal the difference is positive. If the new goal is smaller than the previous goal the difference is negative. From the previous fictitious score, the feeling of success or failure, and the goal set for the previous performance is structured the field for the setting of the next level of aspiration.

TABLE XIV

MEANS AND STANDARD DEVIATIONS OF GOAL DIFFERENCE FOR SUCCESS
AND FAILURE SUBGROUPS IN SELF COMPETITION

Group	Goal Difference	Success or Failure	No.	Mean	S. D.
I	2-1	S	17	+1.882	4.680
	"	F	19	-7.710	5.570

TABLE XIV (Continued)

Group	Goal Difference	Success or Failure	No.	Mean	S. D.
I	3-2	S	19	+3.105	2.917
	"	F	17	-6.353	5.487
II	2-1	S	13	+3.154	1.656
	"	F	14	-5.500	6.590
	3-2	S	14	+4.286	2.358
	"	F	13	-5.231	2.965
III	4-3	S	8	+6.375	4.442
	"	F	8	-7.250	6.886
	5-4	S	8	+3.500	3.938
	"	F	8	-4.500	4.123
IV	4-3	S	17	+5.294	3.859
	"	F	16	-3.750	2.773
	5-4	S	16	+1.687	4.398
	"	F	17	-5.353	3.612

An examination of the table shows that all of the subgroups experiencing success have a positive mean and all of the subgroups experiencing failure have a negative mean. This shows that all the subgroups experiencing success raised their goals and all the subgroups experiencing failure lowered their goals.

TABLE XV

TOTALS FOR GOAL DIFFERENCES IN SELF COMPETITION

Motivation	No.	Total Points	Mean	S. D.	S. E. of Means
S	112	+387	+3.455	3.852	.364
F	112	-659	-5.884	4.962	.469

The total of the failure subgroups is considerably more than that of the success subgroups. Again the evidence indicates that in this particular investigation failure caused goals to be lowered more than success caused goals to be raised. This is not entirely unexpected, considering that the unmotivated goal setting indicated low positive goal discrepancy setting or low negative goal discrepancy setting. It appears that these individuals, though considerably realistic, are characterized by a low protective level of aspiration which is below the actual level of achievement.

The students participating in group competition were influenced by a somewhat different situation. The subjects were given their own score and the average of the fictitious group of which they were supposedly a member. This is the usual class situation that exists. In place of his own previously set goal the subject is given the group average. The field is structured by his score, the group average, and the feeling of success or failure. The latter, of course, was experienced to varying degrees depending upon individual differences. The level of aspiration in this situation can be studied from two different approaches. One method is to consider the difference between the last score and the new goal. This was done in the treatment of the data on goal discrepancy scores. The other approach would be concerned with the relationship between the group average and the new goal. The difference is positive if the goal is larger than the group average and negative if the goal is smaller than the group average. The next table gives information that involves the latter relationship as found in the group motivated situations.

TABLE XVI
MEANS AND STANDARD DEVIATIONS OF THE DIFFERENCES
BETWEEN THE GOAL AND THE GROUP AVERAGES

Group	Goal-less Group Av.	Success or Failure	No.	Mean	S. D.
I	G4-Gr.Av.1	S	17	+1.588	7.484
	" " "	F	19	-15.630	12.180
	G5-Gr.Av.2	S	19	+3.158	4.814
	" " "	F	17	-10.412	6.548
II	G4-Gr.Av.1	S	14	+1.571	7.318
	" " "	F	13	-11.345	11.910
	G5-Gr.Av.2	S	13	+2.769	8.582
	" " "	F	14	-13.714	10.590
III	G2-Gr.Av.1	S	8	+10.750	3.308
	" " "	F	8	-5.750	5.653
	G3-Gr.Av.2	S	8	+6.75	5.804
	" " "	F	8	-4.000	3.939
IV	G2-Gr.Av.1	S	18	+8.333	4.242
	" " "	F	15	-4.200	6.456
	G3-Gr.Av.2	S	18	+6.733	4.688
	" " "	F	15	-9.444	4.232

The first goal set was for trial two and was not motivated by success or failure. Four motivated goals were set. The second and third goals were set for trials three and four. The fourth and fifth goals were set for trials five and six. Group averages were used for trials five and six by experimental groups I and II. Group averages were used for trials three and four by experimental groups III and IV. The first entry in Table XVI gives information concerning the fourth goal and the first group average used by experimental group I. At the time of trial five the subject set

his fourth goal after he had been told the group average for the previous trial.

An examination of Table XVI shows that all the subgroups experiencing success have a positive mean and all of the failure subgroups have a negative mean. The investigation of goal discrepancy scores showed that those in group competition who experienced failure had a total goal discrepancy mean which was negative. So, it is expected that the difference between the group average and the goal set for the next performance would be quite large in a negative direction.

TABLE XVII

TOTALS FOR DIFFERENCES BETWEEN GOALS AND GROUP AVERAGES

Motivation	No.	Total Points	Mean	S. D.	S. E. of Mean
S	112	+535	+4.777	4.777	.649
F	112	-1118	-9.982	10.120	.956

According to expectations, in success, the subjects raised their goal above the group average and lowered the goal beneath the group average in failure. It may be noted again that failure results in lowering of the goal. In failure the goal was lowered more than twice as far as the goal was raised in success.

A comparison of Table XV and Table XVII brings forth additional significant information. The sum of the points made by the success and failure subgroups which experienced group motivation is greater than the total for those that experienced self competition. This is additional evidence favoring group competition as being a greater factor in motivation than self competition, as experienced in this investigation. The more positive

this score the greater was the success experienced and the more negative the greater failure was experienced. An analysis of failure in the two types of competition shows that failure was a greater factor in group competition. In fact, failure in group competition had almost twice as many points as failure in self competition. The critical ratio of 3.848 was obtained for the failure groups. This was, of course, highly significant.

More positive points were produced by success, as a motivator in group competition, than in self competition. This showed that the goal was raised higher above the given information in group competition than in self competition.

Attainment Discrepancy

The attainment discrepancy is a term referring to the difference between the level of aspiration and the achievement score made on that performance. The attainment discrepancy score is positive if the achievement score is higher than the goal and the attainment discrepancy is negative if the score is lower than the goal. An examination of a level of aspiration situation shows that the goal discrepancy score is probably a more accurate factor than the attainment discrepancy, in giving information concerning the psychological goal structure. In setting the goal discrepancy score the subject knows the past score and then determines the goal as the final step. But to determine the attainment discrepancy score the final step is the achievement or performance score which is not a direct open statement but depends upon the actual performance. This means the latter is not as simply controlled and probably is not as accurate a reflection of the structured field.

Table VIII showed that all the means of the achievement gains were positive. That is, the improvement was general regardless of the type of

competition or motivation. Yet, most of the goals were lowered below the previous score as showed by the number of negative goal discrepancy scores. So, with lowered goals, in most cases, but raised achievement scores one would expect positive attainment discrepancy scores.

Table XVIII gives information showing that the above statement is true. The single fact that the goals were lower than the previous performance accounts for the negative goal discrepancy scores and the positive attainment discrepancy scores.

TABLE XVIII

MEANS AND STANDARD DEVIATIONS OF ATTAINMENT DISCREPANCY SCORES
FOR SUCCESS AND FAILURE SUBGROUPS

Group	A. D. Score	Success or Failure	No.	Mean	S. D.
I	A D2	S	17	+1.088	12.566
	" "	F	19	+7.552	7.436
	A D3-	S	19	+7.790	14.620
	A "	F	17	+6.705	13.115
	A D4	S	17	+7.558	4.862
	" "	F	19	+7.842	12.245
	A D5	S	19	+11.236	5.626
	" "	F	17	+6.765	6.468
II	A D2	S	13	+ .154	7.812
	" "	F	13	+12.714	8.944
	A D3	S	14	+12.929	9.896
	" "	F	13	+4.615	6.346
	A D4	S	14	+9.143	9.874
	" "	F	13	+6.077	13.446
	A D5	S	13	+9.769	12.468
	" "	F	14	+10.000	9.928

TABLE XVIII (Continued)

Group	A. D. Score	Success or Failure	No.	Mean	S. D.
III	A D2	S	8	-1.750	9.350
	" "	F	8	-5.375	7.242
	A D3	S	8	+6.875	8.332
	" "	F	8	+2.125	5.206
	A D4	S	8	-1.375	11.286
	" "	F	8	+21.875	13.565
	A D5	S	8	+17.625	13.555
	" "	F	8	-1.125	5.840
IV	A D2	S	18	+7.277	7.694
	" "	F	15	+4.600	8.731
	A D3	S	15	+1.200	4.523
	" "	F	18	+4.612	9.616
	A D4	S	17	+ .236	13.705
	" "	F	16	+7.250	9.134
	A D5	S	16	+6.937	11.006
	" "	F	17	+4.706	12.080

The first attainment discrepancy score is listed in the table as "A.D. Score 2." This score is obtained by subtracting the second level of aspiration from the achievement score obtained for the third trial. The third trial was the first trial to experience success or failure. The first goal was necessarily set for the second trial and the second goal for the third trial, etc.

All of the means for group one and group two have a positive sign. Group four has no negative means and group three has four negative means. It is quite evident that the attainment discrepancy scores are mostly positive. A comparison of the attainment discrepancy score with the goal

discrepancy score shows that the latter is a more stable measure subject to less fluctuation. The largest standard deviation for the goal discrepancy scores is 10.105 and largest for the attainment scores is 14.620. The largest range for the goal discrepancy score is forty-seven and sixty-six for the attainment discrepancy score.

TABLE XIX

TOTALS FOR ATTAINMENT DISCREPANCY SCORES

Competition	Motivation	No.	Total Points	Mean	S. E. Mean	S. D.
Self	Success	112	+586	+5.232	1.265	13.385
"	Failure	112	+840	+7.500	1.076	11.385
Group	Success	112	+783	+6.991	.857	9.075
"	Failure	112	+614	+5.482	.962	10.185

Table XIX shows that all the totals for the groups are positive with only slight variance in the means. No statistically significant results are evident from a study of this table. The standard errors of the means and the standard deviations are both considerably larger than those for the goal discrepancy scores. Again indicating the greater superiority of the goal discrepancy score over the attainment discrepancy score as an indicator of the student's reaction to the situation.

Analysis of Upper and Lower Quartiles

TABLE XX

LOCATION OF Q1 AND Q3 FOR ACHIEVEMENT, TOTAL NUMBER OF CASES, AND NUMBER OF CASES IN EACH GROUP

	Quartile Points	No. of Cases Total	No. of Cases Group I
Q1	53.3	28	9
Q3	74.0	28	8

TABLE XX (Continued)

	No. of Cases Group II	No. of Cases Group III	No. of Cases Group IV
Q1	7	1	11
Q3	6	7	7

It was considered advisable to investigate the upper and lower quartiles for significant trends. The selection of these quartiles was based according to the scores made on trial one. The object was to determine if this experiment substantiated previous investigation and to see if any new conclusions would be available. Q1 was located at 53.3 and Q3 was 74.0. Twenty-eight cases were above 74.0 and twenty-eight cases were located below 53.3. Group IV has the largest number in Q1 and Group I has the largest number in Q3.

TABLE XXI

TOTAL GAINS, TOTAL GOAL DISCREPANCY SCORES AND TOTAL ATTAINMENT
DISCREPANCY SCORES FOR THE UPPER AND LOWER QUARTILES

	Initial Achievement Score Totals	Gains Totals	Goal Disc. Total	Attainment Discrepancy Totals
Q1	1253	+290	+149	+ 335
Q3	2376	+486	-269	+1294

The literature fails to reveal consistent results from comparing the upper and lower quartiles in regard to achievement. This investigation showed that those subjects with the highest initial ability made the largest gains in achievement scores. The difference is not statistically significant but might possibly be so with a larger number of subjects in the quartile. The results leave a somewhat different impression when the gains

are expressed in terms of percentage gain. Since the achievements of the inferior subjects are lower in the beginning, it is possible for a smaller gain to make a larger percentage gain than for a larger gain, for a superior subject, whose initial score is higher. In this investigation it is found that the percentage gain for the upper quartile is 20.45% and the percentage gain for the lower quartile is 23.14%. In terms of achievement scores only, the upper quartile made the greater gain. In terms of percentage gain the lower quartile made the larger gain.

In consideration of the goal discrepancy scores it is found that the upper quartile has a negative goal discrepancy score and the lower quartile has a positive goal discrepancy score. This finding substantiates a considerable amount of former research in which the upper quartile of a group would have a negative goal discrepancy score and the lower quartile would have a positive goal discrepancy score. An analysis of the goal discrepancy scores for the upper and lower quartiles produced a critical ratio which was significant beyond the three per cent level.

A study of the attainment discrepancy score totals gives results which appear to be quite definite. Apparently, previous investigations have provided little information concerning the behavior of the attainment discrepancy scores when studying the upper and lower quartiles. Both totals were positive although the Q1 total was almost four times as large as the Q3 total. The critical ratio of 3.54 was significant. The conclusion that may be made is that the upper quartile's attainment discrepancy score is considerably larger than the lower quartile's score. This is caused by the upper quartile setting low protective goals.

In summary, it may be said that the upper quartile achieved a greater gain in improved scores but a lesser percentage gain, than the lower

quartile. The upper quartile had a negative goal discrepancy score and the lower quartile had a positive goal discrepancy score. The upper quartile had a considerably greater positive attainment discrepancy score than the lower quartile.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

This investigation was performed for the purpose of discovering additional information concerning goal setting under conditions of success and under conditions of failure. This goal setting behavior was studied in two different kinds of competition. (One situation provided self competition and the other was a kind of group competition in which the individual competed with the group average.) One hundred twelve high school senior psychology students were the subjects. They were divided into four groups according to the hour they attended the psychology class. A different group of students was used in preliminary experimentation. (The task was to work simple addition problems.) Each problem was made up of four single digit figures arranged in a single column. The subject was to work as many as possible in a five minute period.) The performance was repeated six times at two-week intervals.) The first trial was performed without particular motivation.) The subject was given the score on the first trial just before he made the second trial.) At this time he set his first level of aspiration. For the third trial two groups entered self competition and two groups entered group competition. All subjects experienced failure and success in both types of competition. This was made possible by manipulation of the information given to the subject. In self competition the subject was given as his previous score a figure above or below the goal set for that trial. In group competition the subject was given the group average as above or below the score he had made for a certain trial.

Levels of aspiration were set for all trials except the first trial. A study was made of these subjects whose initial scores were in either the upper or lower quartile.

The information was used to obtain achievement gains or losses, goal discrepancy scores, attainment discrepancy scores, goal differences in self competition, and the difference between the group average and the goal in group competition.

Conclusions

In most instances there was a rather general increase in the achievement means by the various groups from trial to trial. A study of the achievement gains showed no statistically significant difference between the success and failure subjects who had experienced self competition. For group competition a statistically significant difference beyond the one per cent level was obtained for the success and failure subjects. The success total gains were considerably greater than the total made by the failure subjects. There was a significant difference between the two success groups. The group success subjects made almost twice as many points as the self competition success subjects.

A study of the goal discrepancy scores showed that they were generally negative. This was due to the tendency to set low protective goals. The successful situation was not enough of a psychological factor to produce a positive goal discrepancy score. Failure produced a small positive goal discrepancy score in self competition. Failure produced a large negative goal discrepancy score in group competition. This indicates that failure caused the goal to be lowered more in group competition than in self competition.

An examination of the self competition subgroups showed that without exception the means of the goal differences were positive for the success situations and were negative for the failure situations. The failure negative total was considerably larger than the success positive total. This indicates that in this particular experiment failure lowered goals more than success raised the goals.

An analysis of the upper and lower quartiles showed that those subjects with the highest initial scores made the larger gain in achievement scores. When the gain was expressed in a percentage gain the subjects in the lower quartile made the greater gain. Consideration of the goal discrepancy scores showed that the subjects in the upper quartile had a total negative goal discrepancy score and the subjects in the lower quartile had a positive total goal discrepancy score. The subjects in the upper quartile had a much larger positive attainment discrepancy score than those in the lower quartile. This was due to the tendency for the upper quartile to set low goals.

Major Conclusions

1. Success caused a greater improvement in performance than failure.
2. Success caused scores to be raised more in group competition than in self competition.
3. Failure lowered goals more than success raised them.
4. Failure caused goals to be lowered more in group competition than in self competition.
5. Those subjects with higher initial scores made a greater achievement gain than those with lower initial scores.
6. In terms of percentage gain the subjects in the lower quartile made a greater gain than those in the upper quartile.

7. The subjects in the upper quartile had a total negative goal discrepancy score and the subjects in the lower quartile had a total positive goal discrepancy score.
8. The subjects with high achievement in performance set low protective goals.

Educational Implications

The question might be asked as to how much bearing the results of this study should have upon the work of the classroom teacher. The answer is that while the conclusions are fairly definite, they are of only limited applicability in educational practice. These conclusions should be considered in relation not only to the problem of learning as such, but also to the aims of education, its individual and social purposes.

This experiment was of a laboratory nature. If its conclusions were to be scientifically sound, it was necessary that it be performed under controlled conditions. It was necessary to eliminate as many variables as possible, otherwise it would have been extremely difficult to determine what was being measured. The use of ordinary subject matter would have introduced many factors that would have confused the situation. Prominent among these factors are emotional disturbances caused by like or dislike of the subject, teacher, or school. The fear of low grades, for example, produces emotional blockage in some children. Such disturbing elements tend to prevent the disclosure of uncolored data concerning success and failure in the two kinds of competition used in the experiment.

The experiment showed that success was superior to failure in stimulating achievement. Failure played an important part in producing lowered goals. Success produced greater achievement in group competition than in

self competition, and failure lowered goals more in group competition than in self competition. It is apparent from these facts that where the teacher's purpose is learning or mastery there should be provided as many successful experiences as possible in this type of group competition. Furthermore, the students in the upper quartile should set higher goals which would be closer to their level of achievement. It follows that if the teacher is conceived as an expert in the teaching of subject matter in a particular field, it would be advantageous for him to discover the individual differences present in each student and to provide appropriate educational experiences for maximum growth of each child.

But it is important to observe that other purposes than mastery of subject matter are widely expressed today. It is quite possible that the very competition that would stimulate effort for mastery might thwart the realization of other goals. Many persons believe that mastery of subject matter alone is not sufficient. They believe that competition and rivalry is an incentive conducive to antagonistic attitudes and to antisocial behavior.⁵⁶

Therefore, it may be concluded that the bearing of this study upon the work of the teacher depends upon the general philosophy of the school and upon the specific situation. It must certainly be recognized that, strictly speaking, the study has no absolute educational implications. It does no more than to supply an important body of data that ought to be given consideration by educators. It suggests how efficiency may be increased under the described circumstances.

⁵⁶ Harold Kingsley, The Nature and Conditions of Learning, p. 98.

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